

APPROVED	O.G. FIG.
BY	CLASS
CHAFTSMAN	SUBCLASS

TTG AGA GCG CTC GTC TTT CAC GGC AAC CTC CAG TAT GCC GAA ATC CCA 48  
 Ile Arg Ala Leu Val Phe His Gly Asn Leu Gln Tyr Ala Glu Ile Pro 15  
   5  
 AAG AGC GAA ATC CCA AAG GTC ATA GAG AAG GCA TAC ATC CCA GTC ATC 96  
 Lys Ser Glu Ile Pro Lys Val Ile Glu Lys Ala Tyr Ile Pro Val Ile 15  
   10  
 GAG ACA CTG ATT AAA GAA GAA ATT CCT TTT GGG CTC AAC ATA ACG GGC 144  
 Glu Thr Leu Ile Lys Glu Glu Ile Pro Phe Gly Leu Asn Ile Thr Gly 30  
   20  
 TAT ACC TTA AAG TTC CTC CCG AAG GAT ATT ATA GAC CTC GTT AAA GGG 192  
 Tyr Thr Leu Lys Phe Leu Pro Lys ASP Ile ASP Leu Val Lys Gly 60  
   25  
 GGC ATC GCG AGT GAC CTG ATA GAG ATA ATC GGA ACG AGC TAC ACG CAC 240  
 Gly Ile Ala Ser Asp Leu Ile Glu Ile Gly Thr Ser Tyr Thr His 80  
   30  
 GCA ATA CTC CCC CTC CTG CCG CTT AGC AGA GTA GAA GCA CAA GTT CAG 288  
 Ala Ile Leu Pro Leu Leu Ser Arg Val Glu Ala Gln Val Gln 95  
   35  
 AGA GAT AGG GAA GTT AAG GAG CTC TTC GAG GTT TCT CCA AAG GGA 336  
 Arg Asp Arg Glu Val Lys Glu Glu Leu Phe Glu Val Ser Pro Lys Gly 110  
   40  
 TTC TGG CTG CCA GAG CTC GCC TAT GAC CCG ATA ATC CCT GCC ATA CTG 384  
 Phe Trp Leu Pro Glu Leu Ala Tyr Asp Pro Ile Ile Pro Ala Ile Leu 125  
   45  
   50  
   55  
   60  
   65  
   70  
   75  
   80  
   85  
   90  
   95  
   100  
   105  
   110  
   115





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Applicant(s): Murphy, et al.  
ALPHA-GALACTOSIDASE

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APPROVED	O.G. FIG.
BY	CLASS
CRAFTSMAN	SUBCLASS

AAG	GAC	AAC	GGT	TAT	GAG	TAT	CTA	TTC	GCC	GAC	GGG	GAG	GCG	ATG	CTT	432	
Lys	Asp	Asn	Gly	Tyr	Gl	Tyr	Leu	Phe	Ala	Asp	Gly	Gl	Ala	Met	Leu		
130			135													140	
TTC	TCA	GCT	CAT	CTC	AAC	TCG	GCG	ATA	AAG	CCA	ATT	AAA	CCG	CTC	TAT	480	
Phe	Ser	Ala	His	Leu	Asn	Ala	Ile	Lys	Pro	Ile	Lys	Pro	Leu	Tyr			
145			150													155	
CCA	CAC	CTT	ATA	AAG	GCC	CAA	AGG	GAA	AAG	CGC	TTT	AGG	TAC	ATC	AGC	528	
Pro	His	Leu	Ile	Lys	Ala	Gln	Arg	Glu	Lys	Arg	Phe	Arg	Tyr	Ile	Ser		
165			170													175	
TAT	CTC	CTT	GGT	CTC	AGG	GAG	CTT	AGG	AAG	GCG	ATA	AAG	CTC	GTT	TTT	576	
Tyr	Leu	Leu	Gly	Leu	Arg	Glu	Leu	Arg	Lys	Ala	Ile	Lys	Leu	Val	Phe		
180			185													190	
GAA	GGT	AAG	GTA	ACG	CTA	AAG	GCA	GTC	AAA	GAC	ATC	GAA	GCC	GTA	CCC	624	
Gl	Gly	Lys	Val	Thr	Leu	Lys	Ala	Vai	Lys	Asp	Ile	Glu	Ala	Val	Pro		
195			200													205	
GTT	TGG	GTG	GCC	GTG	AAC	ACG	ATG	GCT	ATG	GTA	ATG	GGA	ATC	AGG	CTT	672	
Val	Trp	Val	Ala	Val	Asn	Thr	Ala	Vai	Val	Met	Leu	Gly	Ile	Gly	Arg	Leu	
210			215													220	
CCT	CTT	ATG	AAT	CCT	AAG	AAA	GTG	GCG	AGC	TGG	ATA	GAG	GAC	AAG	GAC	720	
Pro	Leu	Met	Asn	Pro	Lys	Lys	Val	Ala	Ser	Trp	Ile	Glu	Asp	Lys	Asp		
225			230													235	
AAC	ATT	CTT	CTA	TAC	GGC	ACC	GAT	ATA	GAG	TTC	ATT	GGC	TAT	AGG	GAC	768	
Asn	Ile	Leu	Leu	Tyr	Gly	Thr	Asp	Ile	Glu	Phe	Ile	Gly	Tyr	Arg	Asp		
245			250													255	

FIG. 1B



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APPROVED	O.G.	FIG.
BY	CLASS	SUBCLASS
DRAFTSMAN		

ATT	GCA	GGC	TAC	AGA	ATG	AGT	GTT	GAG	GGA	TTA	TGA	GAG	GTT	ATA	GAC	816
Ile	Ala	Gly	Tyr	Arg	Met	Ser	Val	Glu	Gly	Leu	Leu	Glu	Val	Ile	Asp	
																270
260																
GAG	CTC	AAC	TCG	GAA	CTG	TGC	CTT	CCC	TCA	GAG	CTG	AAG	CAC	AGT	GGA	864
Glu	Leu	Leu	Ser	Glu	Leu	Cys	Leu	Pro	Ser	Glu	Leu	Lys	His	Ser	Gly	
																285
275																
AGG	GAG	CTC	TAC	TTA	CGG	ACT	TCG	AGT	TGG	GCA	CCA	GAT	AAG	AGC	TTG	912
Arg	Glu	Leu	Tyr	Leu	Arg	Thr	Ser	Ser	Ser	Trp	Ala	Pro	Asp	Lys	Ser	Leu
																300
290																
AGG	ATA	TGG	AGA	GAG	GAC	GAA	GGG	AAC	GCA	AGA	CTT	AAT	ATG	CTG	TCC	960
Arg	Ile	Trp	Arg	Glu	Asp	Glu	Gly	Asn	Ala	Arg	Leu	Asn	Met	Leu	Ser	
																320
305																
TAC	AAT	ATG	AGG	GGC	GAA	CTC	GCC	TTT	TTA	GCC	GAG	AAC	GAT	GCA	1008	
Tyr	Asn	Met	Arg	Gly	Glu	Leu	Ala	Phe	Leu	Ala	Glu	Asn	Ser	Asp	Ala	
																335
325																
AGG	GGA	TGG	GAG	CCC	CTC	CCT	GAG	AGG	CTG	GAT	GCC	TTC	CGG	GGG	1056	
Arg	Gly	Trp	Trp	Glu	Pro	Leu	Pro	Glu	Arg	Arg	Leu	Asp	Ala	Phe	Arg	Ala
																350
340																
ATA	TAT	AAC	GAT	TGG	AGG	GGT	GAA	AAT	GGG	GAA	CCT	TAG				
Ile	Tyr	Asn	Asp	Trp	Arg	Gly	Glu	Glu	Gly	Glu	Pro	END				365
355																
360																

FIG. 1C



FIG. 1



**FIG. 14B**

AAG GAC AAC GGT TAT GAG TAT CTA TTC GCC GAC GGG GAG GCG ATG CTT	432
Lys Asn Gly Tyr 135 Glu Tyr Leu Phe Ala Asp Glu Ala Met Leu	
TTC TCA GCT CAT CTC AAC TCG GCG ATA AAG CCA ATT AAA CCG CTC TAT	480
Phe Ser Ala His Leu Asn Ser Ala Ile Lys Pro Ile Lys Pro Leu Tyr	
CCA CAC CTT ATA AAG GCC CAA AGG GAA AAG CGC TTT AGG TAC ATC AGC	528
Pro His 3Leu Ile Lys Ala Gln Arg Glu Lys Arg Phe Arg Tyr Ile Ser	
TAT CTC CTT GGT CTC AGG GAG CTT AGG AAG GCG ATA AAG CTC GTT TTT	576
Tyr Leu Leu G1Y Leu Arg Glu Leu Arg Lys Ala Ile Lys Leu Val Phe	
GAA GGT AAG GTA ACG CTA AAG GCA GTC AAA GAC ATC GAA GCC GTA CCC	624
Glu Gly Lys Val Thr Leu Lys Ala Val Lys Asp Ile Glu Ala Val Pro	
GTT TGG GTG GCC GTG AAC ACG GCT GTA ATG CTC GGC ATC GGA AGG CTT	672
Val Trp Val Ala Val Asn Thr Ala Val Met Leu G1Y Ile Gly Arg Leu	
CCT CTT ATG AAT CCT AAG AAA GTG GCG AGC TGG ATA GAG GAC AAG GAC	720
Pro Leu Met Asn Pro Lys Lys Val Ala Ser Trp Ile Glu Asp Lys Asp	
AAC ATT CTT CTA TAC GGC ACC GAT ATA GAG TTC ATT GGC ATT AGG GAC	768
Asn Ile Leu Leu Tyr G1Y Thr Asp Ile Glu Phe Ile G1Y Tyr Arg Asp	



**FIG. 1Bc**

ATT GCA GGC TAC AGA ATG AGT GTT GAG GGA TTA GAG GTT ATA GAC	816
Ile Ala GLY TYR Arg Met Ser Val Glu Gly Leu Leu Glu Val Ile Asp	
GAG CTC AAC TCG GAA CTG TGC CCC TCA GAG CTG AAG CAC His Ser Gly	864
Glu Leu Asn Ser GLU Leu Cys Leu Pro Ser Glu Leu Leu Lys His Ser Gly	
AGG GAG CTC TAC TTA CGG ACT TCG AGT TGG GCA CCA GAT AAG AGC TTG	912
Arg Glu Leu Tyr Leu Arg Thr Ser Trp Ala Pro Asp Ser Lys Leu	
AGG ATA TGG AGA GAG GAC GAA GGG AAC GCA AGA CTT AAT ATG CTG TCC	960
Arg Ile Trp Arg Glu Asp Glu GLY Asn Ala Arg Leu Asn Met Leu Ser	
TAC AAT ATG AGG GGC GAA CTC GCC GAT GAG AAC AGC GAT GCA 1008	
Tyr Asn Met Arg GLY Glu Leu Ala Phe Leu Ala Glu Asn Ser Asp Ala	
AGG GGA TGG GAG CCC CTC CCT GAG AGG AGG CTG GAT GCC TTC CGG GCC	1047
Arg GLY Trp GLU Pro Leu Pro Glu Arg Arg Leu Asp Ala Phe Arg Ala	
ATA TAT AAC GAT TGG AGG GGT GAA AAT GGG GAA CCT TAG	1086
Ile Tyr Asn Asp Trp Arg GLY Glu Asn GLY Glu Pro End	

260      270      275      280      285      290      295      300      305      310      315      320      325      330      340      345      350      355      360      365